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## Wildlife conservation and reduced emissions from deforestation in a case study of Nantu Wildlife Reserve, Sulawesi: 2. An institutional framework for REDD implementation

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### ABSTRACT

Climate change threatens ecosystems and human society, with tropical deforestation contributing a fifth of anthropogenic carbon emissions. The proposed REDD mechanism will provide compensation for tropical forest nations to reduce deforestation, and potentially also co-benefits for rural communities and biodiversity. The success of REDD implementation will be partially determined by domestic institutional conditions. These have not yet been well articulated, so we develop a systematic approach to assessing institutional capability for REDD implementation at both the local and national levels, based upon the definition of REDD as a payment for ecosystem services (PES). We demonstrate the utility of this framework using the case study of Indonesia and a protected area within it (Nantu). We find that many of the institutional requirements for REDD cannot currently be met on the national level. Yet at the local level, the existence of an ongoing conservation project has strengthened the institutional framework within which REDD could operate, leading to a more positive outlook. We suggest that our analytical framework could be helpful in highlighting the institutional issues that could impede the implementation of REDD across scales and thus be a useful tool in improving the viability of this crucial strategy.

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## 1. Introduction

Tropical deforestation is an important contributor to climate change, causing between 12% and 17% of total anthropogenic

carbon emissions (van der Werf et al., 2009; IPCC, 2007). Reducing emissions from deforestation and degradation (REDD) is a proposed low cost response to climate change (Gullison et al., 2007; Santilli et al., 2005). REDD was incorporated into the roadmap for a post-Kyoto climate change agreement under the

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UN Framework Convention on Climate Change (UNFCCC) at the 13th Conference of Parties (COP13) in Bali in 2007. REDD may generate billions of dollars for provision of the service of carbon storage (Ebeling & Yasué, 2008). Yet there has been little consideration of inherent implementation challenges, or how money can deliver results (Wunder, 2008). This is of concern given that widespread efforts to control deforestation over decades have had a minimal impact (Niles et al., 2002; Linkie et al., 2008). Fundamental questions must therefore be asked that will be relevant to any nation aspiring to successfully implement REDD: what are the institutional requirements, are they in place, and if not, what are the areas of weakness?

We considered Indonesia as a case study. We explored the challenges of REDD implementation at both a national and local scale to assess how well a particular forest protection project (Nantu Wildlife Refuge, northern Sulawesi) met criteria for successful implementation. We chose Indonesia since it is the third largest emitter of carbon globally due to high rates of deforestation and burning, and because it could gain \$1bn in REDD funds annually (Laurance, 2007). It also has a number of REDD projects at various stages of development (e.g. Provincial Government of Aceh, 2007). We chose Nantu as a location proposed for REDD which illustrates the complexity of local implementation of national policy, and for which unusually complete data on the efficacy of conservation are available (Macdonald et al., 2011).

## 2. Methods

### 2.1. Case study site

Indonesia after the fall of President Suharto in 1998 was characterised by political instability, leading to regional autonomy (Kingsbury and Aveling, 2003; O'Rourke, 2002). Indonesia is divided into provinces, then districts, and sub-districts. Under regional autonomy, decision-making power was devolved to district level through Law No. 22/1999. This was changed in 2004 to provincial-level autonomy through Law No. 32/2004. Autonomy greatly affected forestry; cynical exploitation of autonomy laws even legitimised local logging in national parks (Jepson et al., 2001). Following decentralisation, management authorities were powerless or unwilling to halt illegal logging (World Bank, 2003). Indeed collusion between forest officials and illegal loggers often drove deforestation (Smith et al., 2003).

Under regional autonomy all classes of forest land are owned by the state and administered by the Ministry of Forestry (MoF) in Jakarta, except two: protection forest and production forest. These are administered by the regional forestry departments, which fall under the control of district government. However, if either production or protection forests fall within the boundary of two or more districts, the provincial government gains management authority.

Nantu is a protected area in northern Sulawesi, 0°46'N 120°16'E, proposed by local NGO Yayasan Adudu Nantu Internasional (YANI) to the national government as a candidate for REDD funding. It was first declared a protected area (Wildlife Refuge – Suaka Margasatwa) in 1997, and its 31,000 ha fell under the control of MoF Jakarta. This area is adjacent to

11,000 ha of protection forest, and 10,000 ha of production forest which under regional autonomy fell under district government control. Local claims to exploitation rights on the 10,000 ha production forest are addressed below. There are no concessions within the reserve. Agricultural land extends to Nantu's border in the north, east and south. Following lobbying by the Nantu Initiative – a Darwin Initiative funded conservation project – the provincial government incorporated these two areas into Nantu in 2004 to create the 52,000 ha Nantu Boliyohuto reserve as a candidate for a National Park.

Over 18 years a variety of activities has been used at Nantu to promote forest conservation; providing cocoa and teak seedlings for local communities as alternatives to slash and burn, promoting conservation through outreach schemes, and providing a native English language teacher and equipment for local schools (Darwin Initiative, 2006). The Initiative employs a team of four local men and four armed Special Forces personnel (BRIMOB) who patrol the forest five times per week for illegal activity.

### 2.2. Developing and applying a framework for analysis

REDD activities could be targeted to address proximate or ultimate drivers of deforestation, with structural levels of deforestation possibly used as a proxy for a deforestation baseline (Motel et al., 2009) levels. As such there is a range of possible implementation strategies. However for the purposes of this essay, because REDD is a mechanism to pay tropical countries for reduced deforestation, we used a definition of

**Table 1 – Criteria and sub-criteria in the framework for analysis of REDD implementation in Nantu. Criteria developed from a definition of PES; sub-criteria based on a review of key requirements proposed in the literature for REDD activity.**

Criteria	Sub-criteria
1. Well-defined service (Wunder (2006))	<ul style="list-style-type: none"> <li>i. Readily quantifiable</li> <li>ii. Additional (Santilli et al. (2005))</li> <li>iii. Activity does not cause leakage (e.g. Pearson et al. (2005))</li> <li>iv. Explicit description of what the supplier must provide in return for payment</li> </ul>
2. Land tenure is clear	<ul style="list-style-type: none"> <li>i. The provider is readily identifiable</li> <li>ii. The land tenure is not contested</li> </ul>
3. Legal framework is clear	<ul style="list-style-type: none"> <li>i Carbon storage is a legally recognised use of forest</li> <li>ii Legislation on REDD implementation has been published</li> </ul>
4. The owner of the forest can secure forest conservation as a condition of payment	<ul style="list-style-type: none"> <li>i. Sufficient high quality capacity to control deforestation e.g. areas already designated for conservation are conserved</li> <li>ii. There is political commitment to slowing deforestation</li> <li>iii. Payments are made as a condition of forest conservation (Ferraro and Kiss, 2002)</li> <li>iv. Forest is conserved permanently (Santilli et al. (2005))</li> </ul>

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